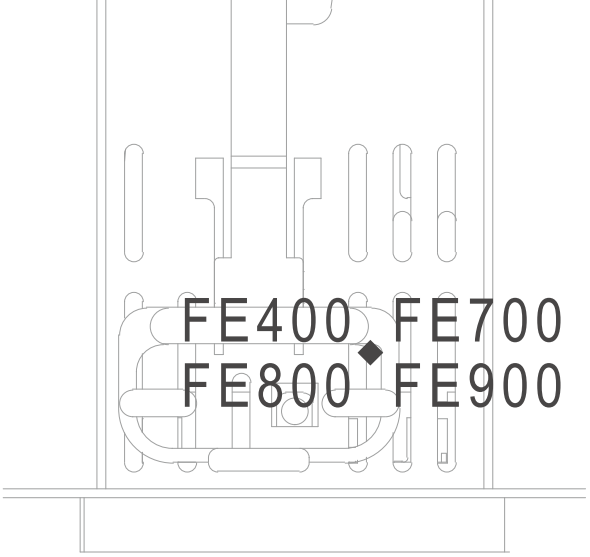
FE Series Controller



FE400 FE700
FE800 FE900

Digital Process Controller

TAIE

台灣儀控股份有限公司
TAIWAN INSTRUMENT & CONTROL CO., LTD

High Reliability

Low Cost

Easy Operation

The New Standard of Process Control

Meet High Performance & Low Cost

Accuracy ± 0.1%

Speed upper to 115200 bps

Compact Design

The 67-mm depth of the controller reduces the constraints on installation location (except FE400).

Large LED Display

Uses large high intensity LED. Clear wide view angle provides outstanding visibility.

Status Indicator Light

Timely visual access to indicator status of Output, Alarm, Auto-Tuning, Communication Response.
10 LED's each corresponding to every 10% differential in output (0-100%). (except FE400)

Excellent Anti-Interference Ability

EMC shielding

Passing the highest level of EMC verification in CE certification. It can resist electromagnetic interference in heavy noise environment.

Ultra Low Temperature Drift

Any operating conditions have been considered in the design, even if in temperature variety ambience, it also not affects PV and control performance.

High Speed Sampling And High Accuracy

ADC 18bit / 50ms

Input can perform 50ms high-speed sampling, enabling stable control and response. Built-in 18-bit high resolution ADC circuit provides up to 0.1% accuracy.

Certification & Universal Voltage

CE

All models are CE-certified.
Operate on any voltage from AC 85~265V at 50/60 Hz.
DC 24V is also available (optional)

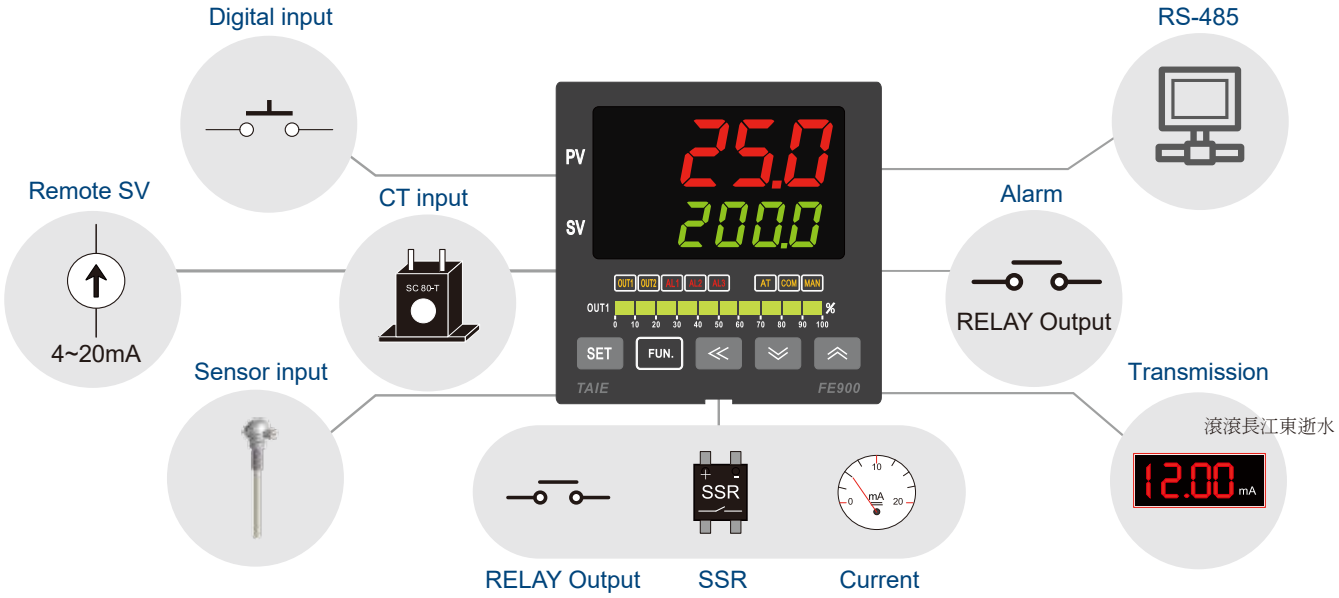
Parameter Lock Function

All parameters are separated in five operation levels (Level1~Level5). Each parameter can be hidden or locked to prevent users unauthorized changes.

Register Mapping

Compatible with FY series controller, parameter address can be switched by software, without changing original HMI or PLC program.

Function block diagram



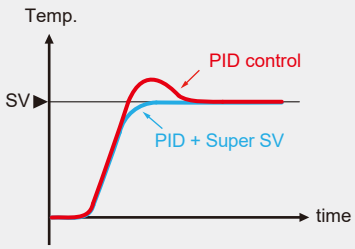
Features

Various I/O Types

Excellent Control Performance

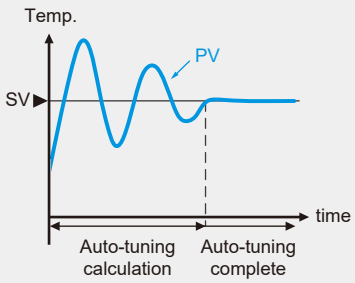
PID Control

Super SV function can effectively suppress temperature overshoot and quickly reach the set temperature.



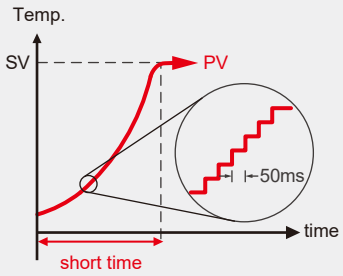
Auto-tuning

Calculate the optimal PID value of the system automatically, to achieve precise control effect.



High speed control

50ms sampling time for fast and precise control of the occasion.



Fast and Stable Communication

Compatible with Modbus RTU communication protocol to quickly establish links with HMI, PLC or SCADA software.

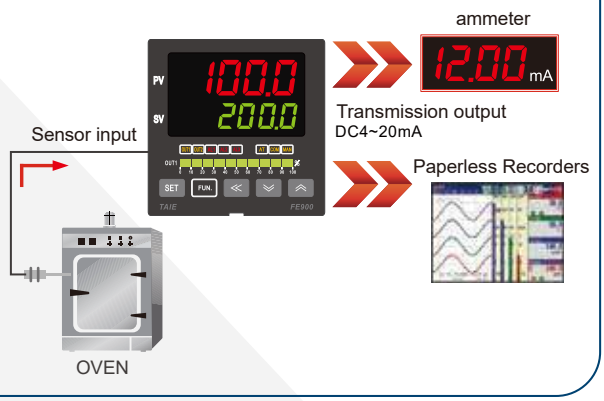
Features

Transmission Output

Transfer parameter digital values as analog signals to external devices.

Signal : DC 0~20mA, 4~20mA,
0~5V, 1~5V, 0~10V, 2~10V

Parameters : SV1, PV1, MV1.....

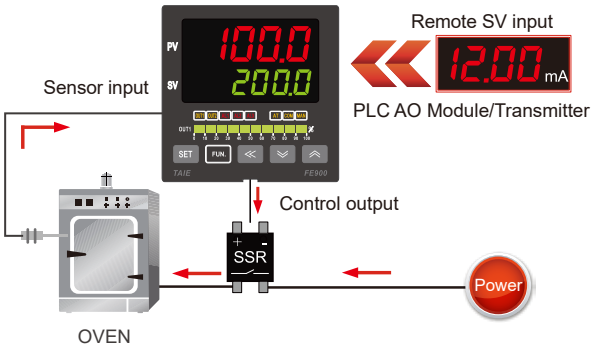


Remote SV

SV is controlled by an analog signal from an external device.

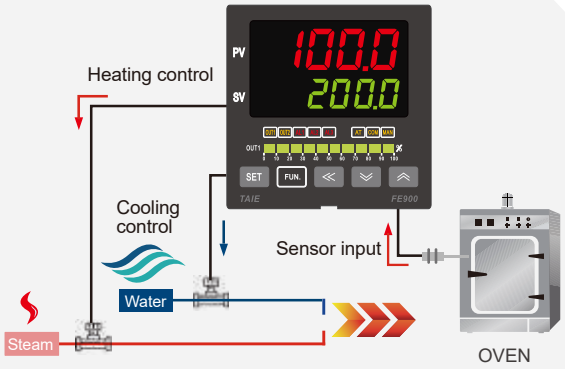
Signal : DC 0~20mA, 4~20mA,
0~5V, 1~5V, 0~10V, 2~10V

Parameter : SV



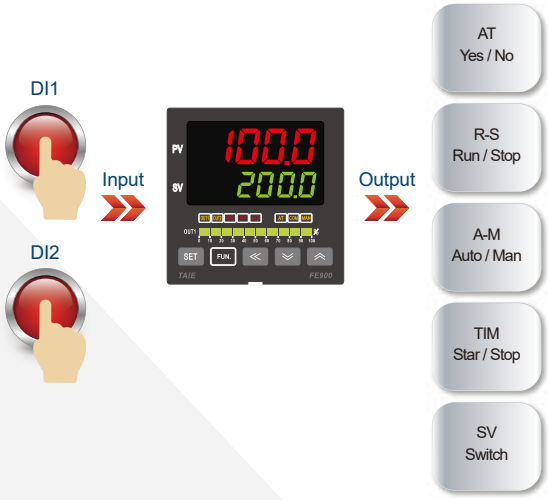
Heating and Cooling Control

Using two outputs of the controller, a device can control the heating / cooling equipment.



Digital Input

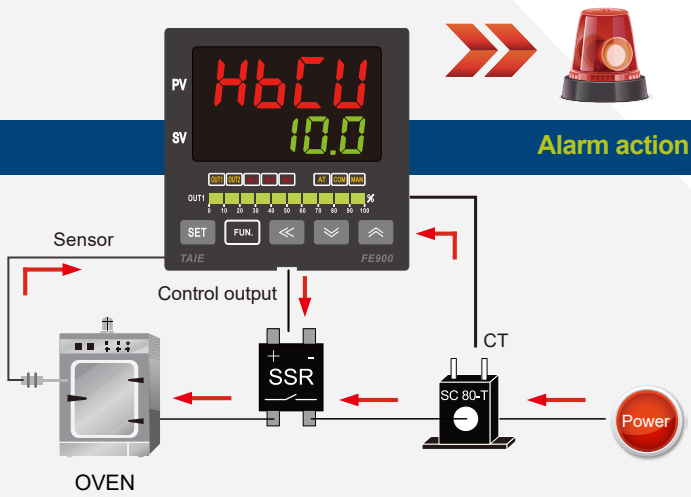
Provide two-point digital input, through external switch to change SV value or execute others events.



Heater Break Alarm (HBA)

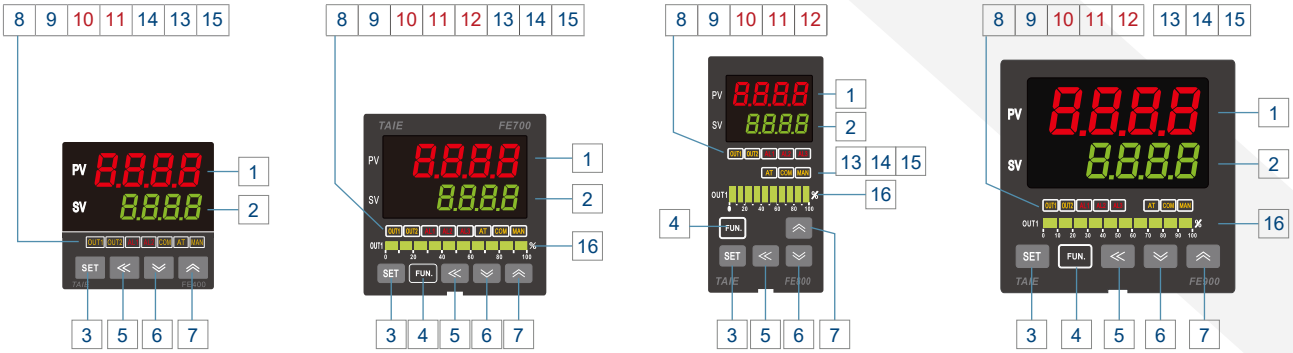
With a CT (current transformer) to monitor the heater current in real time, when the current value is abnormally reduced an alarm signal can be output to notify the user.

- Can be used as the ammeter
- Can be set break time
- Current value and alarm signal can be read by communication



Appearance

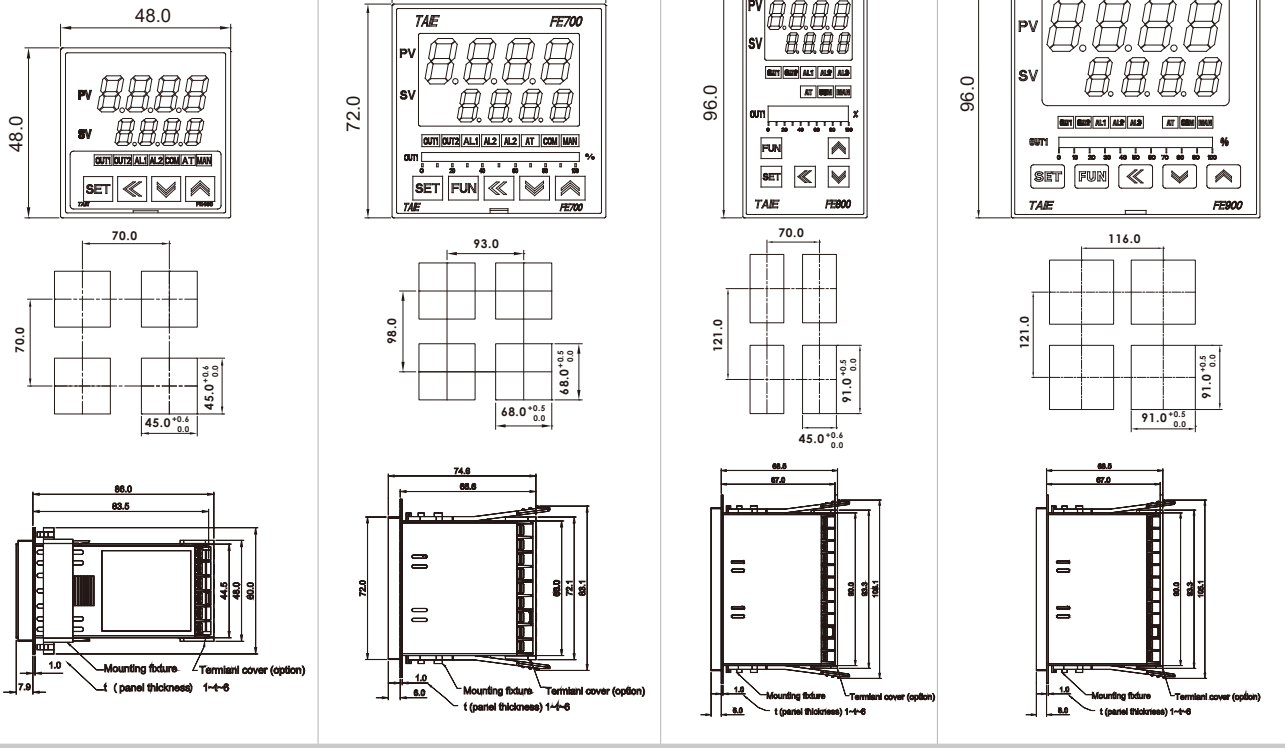
Parts Description



No	symbol	function	No	symbol	function
1	PV	Indicates PV (measured value) and character information such as parameter codes and error codes (Red)	9	OUT2	Lamp lit when OUT2 is activated (Orange)
2	SV	Indicates SV (target set value) and parameter Values (Green)	10	AL1	Lamp lit when Alarm 1 is activated (Red)
3	SET	Used for parameter calling up and set valueregistration	11	AL2	Lamp lit when Alarm 2 is activated (Red)
4	FUN	Auto/manual switch or event enable	12	AL3	Lamp lit when Alarm 3 is activated (Red)
5	≪	Shift digits when settings are changed	13	AT	Lamp lit when Auto-tuning is activated (Orange)
6	﹀	Decrease numerals	14	COM	Lamp lit when controller response data (Orange)
7	∧	Increase numerals	15	MAN	Lamp lit when controller in manual mode or get error condition (Orange)
8	OUT1	Lamp lit when OUT1 is activated (Orange)	16	OUT1%	Output percentage (Green)

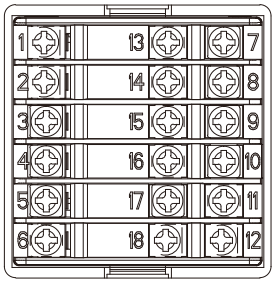
External and Panel Cutout Dimensions

FE400	FE700	FE800	FE900

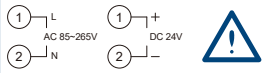


Terminal Arrangement

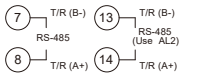
FE400



Power

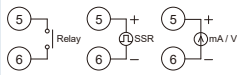


Communication

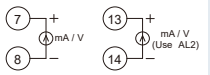


CT Input

Output-1

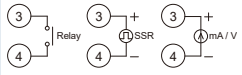


Remote SV

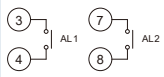


TRS

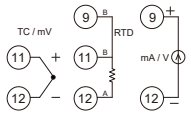
Output-2



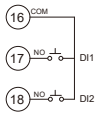
Alarm-1
Alarm-2



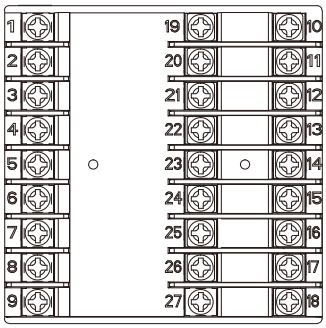
Input



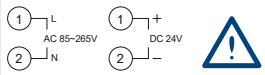
DI Input



FE700



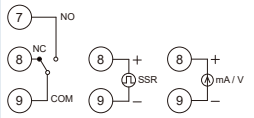
Power



Communication

CT Input

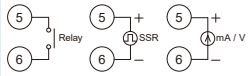
Output-1



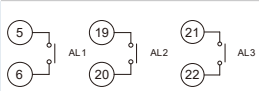
Remote SV

TRS

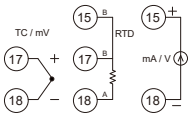
Output-2



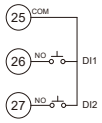
Alarm-1
Alarm-2
Alarm-3



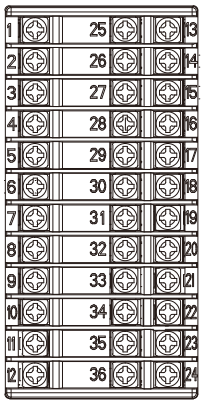
Input



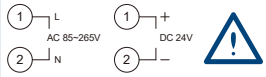
DI Input



FE800



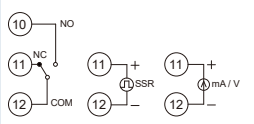
Power



Communication

CT Input

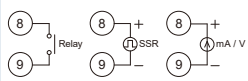
Output-1



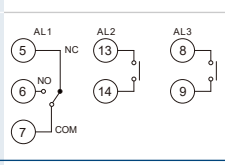
Remote SV

TRS

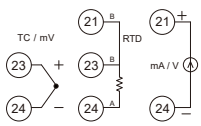
Output-2



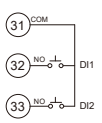
Alarm-1
Alarm-2
Alarm-3



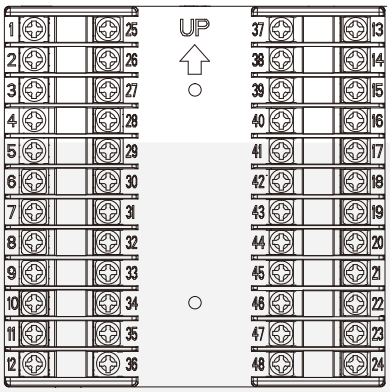
Input



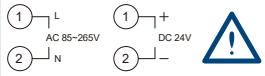
DI Input



FE900



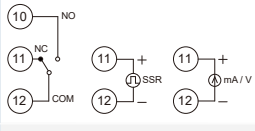
Power



Communication

CT Input

Output-1



Remote SV

TRS

Output-2

Alarm-1
Alarm-2
Alarm-3

Input

DI Input

Specifications

Model		FE400	FE700	FE800	FE900
Supply Voltage		AC 85 ~ 265V, DC 24V (Optional)			
Power Frequency		50/60 Hz			
Power Consumption		Approximately 6VA			
Memory		Non-Volatile Memory EEPROM			
Sensor Input ※ Please refer to Input Type Table		Accuracy : 0.1%			
		Sample time : 50ms			
		Thermocouple : (K, J, R, S, B, E, N, T, W, PLII, L)			
		RTD: PT100			
		DC Linear Analog Input: 0~20mA, 4~20mA 0~1V, 0~5V, 0~10V, 0~2V, 1~5V, 2~10V 0~25mV, 0~50mV, 0~70mV			
Output	OUT1 Relay	1a	1c	1c	1c
		1a SPST-NO, 250 VAC, 5A (resistive load), electrical life: 100,000 operations 1c SPDT-NO, 250 VAC, 5A (resistive load), electrical life: 50,000 operations SPDT-NC, 250 VAC, 2A (resistive load), electrical life: 20,000 operations			
	OUT2 Relay	SPST-NO, 250 VAC, 5A (resistive load), electrical life: 100,000 operations			
	SSR Drive	ON: 24 V OFF: 0V max. load current: 20mA, with short protection			
	Linear	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V			
Control Method		ON-OFF or P, PI, PID control			
Alarm	Alarm 1	1a	1a	1c	1c
		1a SPST-NO, 250 VAC, 5A (resistive load), electrical life: 100,000 operations 1c SPDT-NO, 250 VAC, 5A (resistive load), electrical life: 50,000 operations SPDT-NC, 250 VAC, 2A (resistive load), electrical life: 20,000 operations			
	Alarm 2	SPST-NO, 250 VAC, 5A (resistive load), electrical life: 100,000 operations			
	Alarm 3	---	1a	1a	1a
		SPST-NO, 250 VAC, 5A (resistive load), electrical life: 100,000 operations			
TRS	Re-transmitted Signal	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V			
	Source of Re-transmission	SV1, PV1, MV1, SV1R, PV1R, MV1R, SV2, PV2, MV2, SV2R, PV2R, MV2R			
	Accuracy	0.1%			
	Resolution	14 bit			
Remote SV	Signal	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V			
	Resolution	18 bit			
	Controlled by	SV			
Digital Input		2 points			
Communication	Interface	RS-485 Half duplex Communication MAX. 31 units, MAX. distance 1200 meters			
	Protocol	Modbus RTU, TAIE			
	Parity bit	NONE, ODD, EVEN			
	Data bit	8 bit			
	Stop bit	1 or 2 bit			
	Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps			
Malfunction vibration		10~55 Hz 20m / s² , for 10 mins. each in X, Y and Z directions.			
Vibration resistance		10~55 Hz 20m / s² , for 2 hr. each in X, Y and Z directions.			
Malfunction shock		100m / s² , 3 times each in X, Y and Z directions.			
Shock resistance		300m / s² , 3 times each in X, Y and Z directions.			
Operating environment Temperature / Humidity		0 ~ 50°C (in the case of no freezing or condensation) / 20% ~ 90% RH			
Storage environment Temperature		-25 ~ 65°C (in the case of no freezing or condensation)			
Terminal cover		●	●	●	●
Dimension (mm)		W48 x H48 x D91	W72 x H72 x D73	W48 x H96 x D73	W96 x H96 x D73
Weight		Appox.120	Appox.150	Appox.170	Appox.230

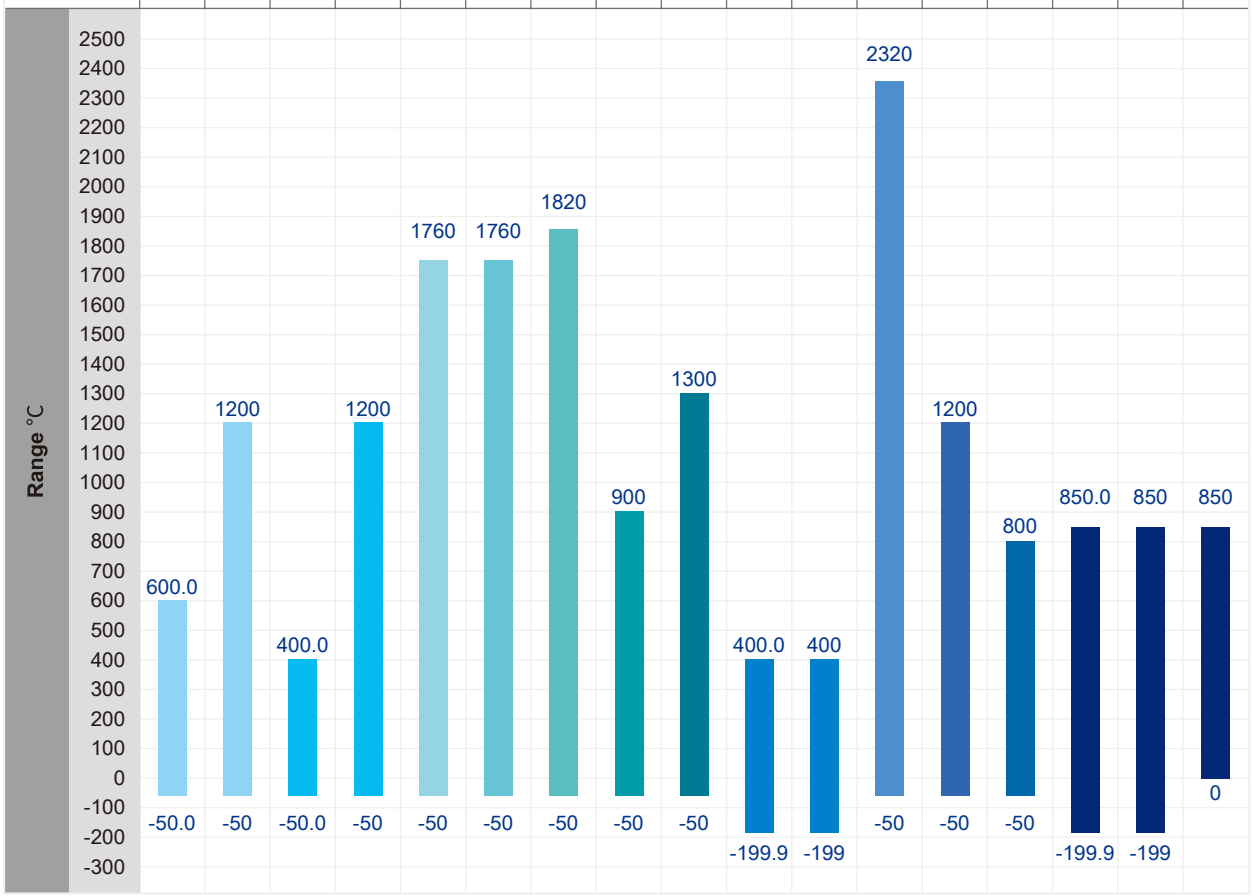
Order Information

Block means optional functions with additional charge.

	Output 1	Output 2	Alarm	TRS	Remote	COMM	Input type	Power
	1	0	1	0	0	0	01	A
FE400 FE700	0 None 1 Relay 2 Voltage Pulse (SSR Drive) 3 4-20mA 4 0-20mA A 0-5V B 0-10V C 1-5V D 2-10V	0 None 1 Relay 2 Voltage Pulse (SSR Drive) 3 4-20mA 4 0-20mA A 0-5V B 0-10V C 1-5V D 2-10V	0 None 1 1set 2 2set 3 3set A HBA B HBA+AL2 C HBA+AL2+AL3	0 None 1 4-20mA 2 0-20mA A 0-5V B 0-10V C 1-5V D 2-10V	0 None 1 4-20mA 2 0-20mA A 0-5V B 0-10V C 1-5V D 2-10V E DI F Remote+DI	0 None B RS-485 (old FE) C RS-485	See input type code	A AC 85-265V D DC 24V
FE800 FE900								

Input Type Table

TYPE	Thermocouple														RTD		
	K		J		R	S	B	E	N	T		W	PLII	L	PT100		
Kind	K1	K2	J1	J2	R	S	B	E	N	T1	T2	W	PLII	L	PT1	PT2	PT3
Code	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17



TYPE	LINEAR											
	AN1	AN2						AN3	AN4			
Code	18	19	20	21	22	23	24	25	26	27	28	29
Range	0~25mV	0~50mV	0~20mA	0~1V	0~2V	0~5V	0~10V	0~70mV	4~20mA	10~50mV	1~5V	2~10V
	4 kinds of choices : -1999~9999 -199.9~999.9 -19.99~99.99 -1.999~9.999											

- Before operating this product, read the instruction manual carefully to avoid incorrect operation.
- This product is intended for use with industrial machines, test and measuring equipment.
- It is not design for use with medical equipment.
- If it is possible that an accident may occur as a result of the failure of the product or some other abnormality, an appropriate independent protection device must be installed.

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